

BANK SWALLOW AND BELTED KINGFISHER NEST IN DREDGE SPOIL ON THE TIDAL HUDSON RIVER

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Bank Swallow (*Riparia riparia*) breeding colonies have been found in stream, lake, and sea banks, gravel and sand pits, road and railroad cuts, sawdust and coal dust piles, mine tailings, cut peat faces, and an abandoned dry well (Stoner 1936, Bent 1963, Bull 1974, Wilson 1981, Limbert 1983). Bank Swallows require steep banks of relatively loose material, and the natural nesting sites are typically waterway banks where action of waves or currents maintains a steep face. Bent (1963) noted that Bank Swallows are more common in glaciated areas where sand and gravel outwash deposits occur. Occasionally clay banks are used (Bull 1974).

There are many sand and gravel pit nesting sites where mining maintains steep banks (Freer 1979), but nesting colonies may shift from site to site in response to substrate changes. The ability of Bank Swallows to shift among changing nesting habitats readily permits the swallows to accept artificial sites. However, Hoagland and Sherman (1976) inferred that coloniality evolved in the Bank Swallow for protection from predation and not because of a lack of nesting habitat.

The Belted Kingfisher (*Ceryle alcyon*) also shows behavioral plasticity, and typically digs its nest burrows in sand, gravel or clay banks. These are either natural eroding banks of lakes, streams or wetlands, or man-made sites such as banks of canals, surface mines, and road or railroad cuts (Stoner 1932, Trautman 1940, Bent 1964, Hamas 1974). More unusual nesting sites reported include sand dunes, sawdust piles, sanitary land fills, mud slides formed by beaver, a "dead furrow" in a plowed hillside field, and holes in dead trees or stumps over water or on land (Bent 1964, Hamas 1974, Hopkins 1980, Weber and Miller 1981). Davis (1982) believed that optimal nesting banks were in short supply along an Ohio stream, because of substrate texture and distance from favored feeding riffles. Hamas (1974) also thought natural nesting banks scarce in a Minnesota locality because of slumping and vegetation development.

On 3 June 1982, we found an active nesting colony of Bank Swallows in an eroding scarp of an old dredge spoil island in the tidal Hudson River at Stockport Middle Ground, Columbia County (US Geological Survey, Hudson North, NY 1953). The bank was about 100 meters long and four meters high (above high tide), on the southwest corner of the island, and facing southwest. The site is 300-600 meters across open water from other shores. The bank was composed of sand with a few

thin layers of woody material, the upper half nearly vertical, the lower half loose and at angle-of-repose. The top of the bank had a turf composed of herbaceous and woody vegetation including Black Locust (*Robinia pseudoacacia*), Eastern Cottonwood (*Populus deltoides*), Silver Maple (*Acer saccharinum*), and grape (*Vitis* sp.). A dozen swallows flushed from more than 100 burrows; more were flying nearby. The holes were in the upper (vertical) two meters of the bank.

On 14 September 1982, EK returned to the site. Many of the holes that had been visible in June seemed obliterated. Another nesting site was found in a second spoil deposit 1.3 kilometers northward on the south end of the Gays Point peninsula. This was a sandy bank facing southwest, 20 meters long and four meters high, nearly vertical throughout, with a turf of Staghorn Sumac (*Rhus typhina*), vines and herbs. A few herbs grew on the face and vines hung down from the top. About 10-20 Bank Swallow holes were visible near the top of the bank.

On 30 May 1983, EK and Pete Salmansohn counted 319 Bank Swallow burrows at the Stockport Middle Ground colony. This count included all burrows that did not visibly dead-end; the number of active burrows may have been less. Many Bank Swallows were flying around and entering and leaving burrows.

On 3 June 1982 a kingfisher was seen perched on the Stockport Middle Ground bank. On 14 September 1982 at the Gays Point bank, EK found a blind burrow too large for a Bank Swallow that showed paired grooves at the lip, indicative of a Belted Kingfisher (Bent 1964). On 30 May 1983, EK observed a kingfisher enter a nest burrow in the Stockport Middle Ground bank. This burrow was in the midst of the Bank Swallow colony but was separated from the nearest swallow burrows by two to three meters on both sides.

Episodes of navigation channel dredging occurred between 1926 and 1930 and between 1935 and 1940 in the general upper tidal Hudson (City of Hudson to Albany), and spoil was probably deposited at Stockport Middle Ground and Gays Point peninsula during one or both of those periods (Malcolm Pirnie Engineers 1981). The Gays Point peninsula is shown on the 1953 USGS map as two parts of a peninsula separated by a channel. The channel no longer existed in 1982 and was presumably filled during the most recent dredging episode in the vicinity of Stockport, 1957-59.

Stockport Middle Ground and Gays Point peninsula were constructed as peripheral berms about six meters high with ponded interiors. The westerly exposures of the berms are subject to erosion by wind, waves, and ship wakes that sap localized areas with resulting steep sand banks. The sites of the spoil deposits were originally tidal wetlands or shallows.

Both sites are part of the Hudson River National Estuarine Sanctuary, and of Hudson River Islands State Park.

Our observations indicate that Bank Swallows and Belted Kingfishers nest in eroding banks of sandy dredge spoil. We are unable to find published reports of the use of this nest substrate by these species. Unpublished Significant Habitat Reports of the Significant Habitats Unit, New York State Department of Environmental Conservation, mention Bank Swallows nesting in dredge spoil at Stockport Middle Ground, and also at Middle Ground Flats about five kilometers down-river near the city of Hudson. Other similar spoil banks occur between Catskill and Albany; Bank Swallows and Belted Kingfishers could nest at these other sites. This is not justification for further disposal of spoil in wetlands and shallows. Future spoil disposal will probably be done on upland sites near the river (Malcolm Pirnie Engineers 1981), and these future spoil deposits could be designed to provide additional nesting habitat for Bank Swallows and Belted Kingfishers.

This is Bard College Field Station - Hudsonia Contribution 28.

Literature Cited

- Bent, A. C. 1964. *Life histories of North American cuckoos, goatsuckers, hummingbirds and their allies*. Dover Publications, New York, 244 p. + 36 pls. (Reprint of U.S. Nat. Mus. Bull. 176, 1940.)
- Bull, J. 1974. *Birds of New York State*. Doubleday/Natural History Press, Garden City, New York. 655 p.
- Davis, W. J. 1982. Territory size in *Megasceryle alcyon* along a stream habitat. *Auk* 99: 353-362.
- Freer, V. M. 1979. Factors affecting site tenacity in New York Bank Swallows. *Bird-Banding* 50 (4): 349-357.
- Gross, A. O. 1963. Bank Swallow. pp. 400-424. in A. C. Bent. *Life histories of North American flycatchers, larks, swallows, and their allies*. Dover Publications, New York. 555 p. + 70 pls. (Reprint of U.S. Nat. Mus. Bull. 179, 1942.)
- Hamas, M. J. 1974. Human incursion and nesting sites of the Belted Kingfisher. *Auk* 91 (4): 835-836.
- Hoagland, J. L. and P. W. Sherman. 1976. Advantages and disadvantages of bank swallow (*Riparia riparia*) coloniality. *Ecol. Monogr.* 46 (1): 33-58.
- Hopkins, M. N. 1980. Belted Kingfisher nesting in a sawdust pile. *Oriole* 45 (1): 22.
- Limbert, Martin, 1983. Sand martins nesting in peat faces in Britain. *Naturalist* 108: 107.
- Malcolm Pirnie Engineers. 1981. *Draft Environmental Impact Statement and 10-year management plan; Hudson River Federal Channel maintenance dredging*. Department of the Army, New York District, Corps of Engineers.

- Stoner, D. 1932. Ornithology of the Oneida Lake region: with reference to the late spring and summer seasons. *Roosevelt Wildlife Annals* 2 (3-4): 271-764 + folded maps.
- Stoner, D. 1936. Studies on the bank swallow, *Riparia riparia riparia* (Linnaeus). *Roosevelt Wildlife Annals* 4 (2): 126-233 + map.
- Trautman, M. B. 1940. The birds of Buckeye Lake, Ohio. University of Michigan Press, Ann Arbor. *Misc. Publ. Mus. Zool. Univ. Michigan* 44, 466 p.
- Weber, W. C. and P. R. Miller. 1981. Belted Kingfishers nesting in abandoned sawdust piles. *Mississippi Kite* 11 (2): 48-49.
- Wilson, P. W. 1981. Successful nesting of the bank swallow in Oklahoma. *Bull. Oklahoma Ornith. Soc.*, 14 (2): 9-11.

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